"EFFECT OF ADJUNCTIVE MUSIC LISTENING INTERVENTION ON CRAVING AND WITHDRAWAL SYMPTOMS IN PATIENTS WITH ALCOHOL DEPENDENCE"

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1. INTRODUCTION

Music is a vibrant art form and cultural activity which leaves no *Homo Sapiens* getting enthralled. The medium of music is sound organized in time. The common elements of music are pitch, rhythm, dynamics, and the sonic qualities of timbre and texture. Music, at a neurobiological level, provokes peak experiences and stimulates neural reward and emotion systems[1]. Music can also alleviate pain perception by inhibiting neural activity in the limbic system. In addition to these, music readily acts upon neural activity. Due to such effects on the brain, music can be used as a therapeutic intervention.

Music therapy is an ancillary therapy to realize the objectives of treatment of alcohol-dependent patients and substance abusers. It is a music intervention designed by a qualified music therapist and involves active and receptive approaches like listening, playing the instrument, lyric analysis, songwriting, singing, dancing, and drumming. On the other hand, music listening is a receptive/passive method wherever the patient solely listens to music and without interaction with the therapist[2].

Alcohol dependence is one of the most agonizing problems of the modern world as the World Health Organization[3] states that 0.6 % of the global adult population travails in the grip of alcohol dependence syndrome.

Treatment of alcohol dependence consists of pharmacological interventions, psycho-social interventions, and other alternative and complementary therapies. As treating alcohol dependence in the first stage involves dealing with the acute withdrawal symptoms and detoxification procedures, pharmacological interventions are used in this stage. Later stages involve attempts to maintain patients in remission and develop a lifestyle compatible with long-term abstinence and this requires adopting psycho-socio interventions.

In recent years, psychological interventions such as social skills training, motivational enhancement, behavior contracting, cognitive therapy, marital and family therapy, aversion therapy, and relaxation training have been applied to treat alcoholism. Unfortunately, a particular approach is not feasible as the patients are varied and the problems of clients are multifarious.

Although Motivational Enhancement Therapy (MET) is applied to treat patients with alcohol dependence syndrome it requires motivational strategies to mobilize the client's change resources

As pharmacological and verbal therapies prove to be inadequate for all patients with alcohol dependence, the need for the inclusion of mind-body therapies has been realized. Music listening is used as a music intervention to the regular treatment in the detoxification centers treating alcohol dependents. Music listening is an additive therapy or complementary therapy and it is not the only treatment for alcohol dependence but it facilitates the recovery of the alcoholics and substance abusers. In the meta-analysis of music therapy interventions by Hohmann et al[4] numerous benefits of music interventions have been documented.

Music Therapy provides opportunities for self-expression, cooperative group activity, imagination, and synchronized sensor motor experience and impact positively mood, stress, self-esteem, motivation, emotional expression, and social cohesion[5], Music helps patients tap into emotions and needs that may be difficult to express through more traditional forms of communication. Furthermore, music therapy also provides a way to motivate patients to receive treatment. This may, in turn, enhance social or interpersonal, affective, cognitive, and behavioral functioning. Research indicates that music therapy is effective at reducing muscle tension and anxiety, and at promoting relaxation, verbalization, interpersonal relationships, and group cohesiveness.

To advance our knowledge in a field that is related to domains like biology, psychology, and music, it is necessary to adopt an interdisciplinary research approach. Interdisciplinary involves the combining of two or more academic disciplines into one activity (e.g., a research project). In interdisciplinary research, the researcher need not be specialized in all the fields of research. Instead, he can draw the best knowledge and practice from experts in the field and try to explore a new innovative solution to the research problem. In this research for example, the researcher is a qualified clinical psychologist and not a qualified music therapist and is engaged in this interdisciplinary research involving the fields of psychiatry, music medicine, and clinical psychology. This study explores the direct benefits of a music listening intervention, unlike a music therapy intervention which involves therapeutic interactions /communications and presenting music as an experience.

2. AIMS AND OBJECTIVES

AIMS

To study the effect of adjunctive music listening intervention on craving and withdrawal symptoms in patients with alcohol dependence.

OBJECTIVES

1. To compare the changes in the level of craving of patients with Alcohol Dependence Syndrome, receiving treatment as usual (pharmacological and psychological interventions) with and without music listening intervention.
2. To compare the changes in the severity of withdrawal symptoms of patients with Alcohol Dependence Syndrome, receiving treatment as usual (pharmacological and psychological interventions) with and without music listening intervention.
3. To record the perception of the caretakers of the patients with Alcohol Dependence Syndrome with regard to the effect of music listening intervention.
4. To record the perception of the interdisciplinary team treating patients with alcohol dependence about the benefits of music listening intervention

3. RESEARCH QUESTIONS

1. Is adjunctive music listening intervention effective in the management of craving in patients with alcohol dependence receiving treatment as usual?
2. Is adjunctive music listening intervention effective in the management of withdrawal in patients with alcohol dependence receiving treatment as usual?

4. BRIEF REVIEW OF THE LITERATURE

A scrutiny of the investigations of the research carried out by different scholars in different settings and various countries was quite absorbing to observe that music therapy proves to be an adjunct therapy to the patients of alcohol dependence syndrome undergoing regular treatment in detoxification centers. Although investigations were aplenty, the research in India was minuscule while contrasting to the magnitude of alcohol dependence. However, music therapy was applied in palliative care, ophthalmic treatment, and pain management as well as in detoxification units.

The review of the literature can provide insight into the miraculous functioning of music therapy among alcohol dependents. Men and women, young and old were equally influenced by the scintillating effect of music, whether it was singing, writing the lyrics, lyric analysis, drumming, or playing instruments.

Ao in a quasi-experimental doctoral research investigated the effect of classical music on 100 alcohol dependents in the reduction of depression, anxiety, stress, and craving for alcohol in Nagaland, North East India. The participants listened to classical music for a month. The results showed that there is a reduction in alcohol craving[6].

An ethnomusicologist, Harrison undertook ethnographic research on the application of music therapy in the treatment of addiction among indigenous people. He witnessed powwow and hand drumming in healing circles, rituals, and sweat lodge ceremonies for eight years. His data analysis established that social music culture prevented addiction[7].

Silverman examined the effect of lyric analysis intervention on withdrawal and craving for 144 alcoholic inpatients. In the experiment-control design, the results showed that the experimental group participants had lower withdrawal and craving[8]. In another investigation, He examined the effectiveness of songwriting on craving with 129 patients and found that music therapy had lowered craving mean scores[9]. In another randomized controlled trial taken up by him[10] to determine if a music therapy lyric analysis intervention could affect withdrawal symptoms and locus of control in patients who were in detoxification. Participants (*N* = 118) were randomized into a music therapy lyric analysis condition or a verbal therapy condition by group. After the session, participants completed a post-test with established psychometric instruments measuring symptoms of withdrawal and locus of control. Although there were no significant differences between groups, results indicated that patients in detoxification facilities tended to have slightly less severe withdrawal symptoms after a music therapy session than after a verbal psychotherapy session. Participants in the experimental group tended to have slightly higher mean external control scores. Most participants indicated they thought the music therapy (experimental) or relapse prevention (control condition) was the most helpful/therapeutic program in which they had participated in the unit. Concerning free response written comments on the post-test, participants in the experimental condition made more comments categorized into the "positive change" category than participants in the control condition.

Silverman[11] conducted another study to determine the effect of a "rockumentary" music therapy intervention on readiness to change and craving in patients in a detoxification unit utilizing psychometric instruments in a randomized three-group design. Participants (N = 141) were randomized by group to a rock music therapy intervention, verbal therapy, or recreational music therapy condition. All interventions were scripted and manualized in a post-test-only design. Concerning readiness to change, results indicated there were significant between-group differences in Contemplation and Action subscales, with participants in the rockumentary and recreational music therapy conditions having higher means than participants in the verbal therapy condition. There were no differences between the two music therapy conditions concerning readiness to change variables. Although not significant, participants in both music therapy conditions tended to have lower mean craving scores than participants in the verbal therapy condition. Concerning Likert-type ratings of motivation to change, perception of helpfulness, and perception of enjoyment, participants in both music therapy conditions tended to have slightly higher mean scores than participants in the verbal therapy conditions. Participants' post-test written comments were positive, regardless of condition.

Gardstrom et al explored the effect of music therapy on women with alcohol dependence. The researchers used music listening (receptive), composition, improvisation, and performing (re-creative) during twenty music sessions. 89 surveys were collected pre and post-sessions. Half of the respondents affirmed that there was a decrease in each of the disorders, viz., anxiety, anger, and sadness[12].

Vernor examined the effect of listening to music and drumming among youths struggling with trauma with alcohol. The teens were travailing in depression, stress, and pain during the years of addiction or withdrawal process. Listening to music and drumming were part of music therapy. The respondents who listened to music and drumming stated that the levels of anxiety, stress, and pain had decreased[13].

Albornoz investigated the effect of group improvisational music therapy on 24 adults with alcohol dependence syndrome. In the experiment-control research, 12 group improvisation sessions were held for three months. For data, the Beck Depression Inventory (BDI) and Hamilton Rating Scale for Depression (HRSD) were used. It was found that the

experimental group was significantly less depressed than the control group after music therapy[14].

Gardstrom and Diestelkamp undertook a quasi-experimental study to determine the level of anxiety among alcohol-addicted women. The researchers applied a single group, pre-test, and post-test design. The participant group comprised 53 women in the age group 18-60 years women. All reported psychological anxiety with somatic symptoms. In the music therapy sessions held for 9 weeks, the methods were composition, receptive (listening), improvisation, and re-creative (performing). The post-session survey analysis showed that 62% of participants specified a reduction in anxiety[15].

Ghetti et al applied music therapy for the reduction of craving and substance use, enhancing motivation for treatment and retaining it. There was no age limit or difference of gender for the participants. They received music therapy interventions in inpatient, outpatient, therapeutic, community, or supportive aftercare settings. Self-reports were collected. The respondents reported that there was a reduction in craving and also in psychological symptoms, namely, anxiety, depression, and anger. Further, they affirmed that there was an inducement of motivation to seek treatment and retain it[16].

Dunlap made a phenomenological inquiry examining the experience of group music therapy for 16 women recovering from addictions. The treatment facility was for all women. The music therapy lasted for three months in the inpatient treatment facility. The microanalysis of voluntary semi-structured interviews about the music therapy experience yielded outcomes, viz., music forms connections and desirable intrapersonal shifts; music had an impact on treatment and recovery[17].

Zarate explored the individual responses of 16 participants to music therapy clinical improvisation and anxiety symptoms. The one-hour instrumental and vocal music therapy sessions lasted for 12 weeks. The anxiety level started decreasing after the end of 6 weeks of music therapy sessions. The results showed that the improvisation of instrumental and vocal music had significantly decreased participants' anxiety symptoms with the maintenance of symptom improvement[18].

Need for this research

There is a paucity of music listening intervention studies with alcohol dependence syndrome in Indian settings. Globally research studies were using less music as a listening intervention among patients with alcohol dependence as an additive therapy. Since some patients with alcohol dependence fail to respond to psychiatric treatment music listening intervention can be explored as an additive therapy.

The research was guided by an inter-disciplinary team comprising psychiatrists, a music therapist, and a medical educator to use a music listening intervention in patients with alcohol dependence syndrome receiving both pharmacological treatment as well as psychological therapy to find out if this music listening intervention can impact the levels of craving and withdrawal symptoms in patients with Alcohol dependence syndrome.

5. METHODOLOGY

This study used predominantly Mixed Methods Research (MMR) to address the research questions. The inadequacy of a single research approach is perceived and hence, in the pragmatic sense and the holistic treatment of the research questions, a mixture of methods was crucial and obligatory.

The methodology started with converging and triangulating quantitative and qualitative data sources. Several forms were used for this approach such as intergrading, synthesis, quantitative and qualitative, multi-method, and mixed methodology[19]. This approach poses challenges – the need for extensive data collection, and a time-intensive nature analysis of text and numeric data. Researchers needed to be familiar with both quantitative and qualitative forms of research.

Quantitative and qualitative data were collected at the same time and implementation is simultaneous. The collection of data became manageable since the need for multiple visits was prevented. Integration of data occurred after data collection and analysis and during interpretation.

The patients were analyzed within the allocated group, irrespective of whether they experienced the intended intervention.

Participants of the Study

The participants of the study were patients with alcohol dependence syndrome according to ICD-10. The participants needed to fulfill the inclusion and exclusion criteria and were randomized into two groups, namely, the experimental group and the control group. Randomization was done through a computer-assisted method.

The experimental group comprised patients receiving treatment as usual and music listening intervention and the control group received treatment as usual. Informed written consent was obtained from all the respondents of the study as well as the caregivers and the interdisciplinary treating team taking part in the research.

Methods:

The study used a mixed method design (MMR) involving the following methods

1) Randomized control trial (Quantitative) system and accordingly the patients were allocated to either intervention or control groups).

2) Interviews with the caretakers of patients receiving music listening interventions (Qualitative)

3) Interview with the interdisciplinary treating team of patients with alcohol dependence syndrome enrolled for the study (Qualitative)

Study Period: The Study was conducted over two years.

Instrumentation:

The tools of research used in the present study are:

1. Form for Demographic Details
2. Alcohol Craving Questionnaire-Revised Short Form - (ACQ - SF - R)
3. Clinical Institute Withdrawal Assessment of Alcohol Scale – Revised (CIWA-Ar).
4. Form for data on Baseline, 7^{th} day, 14^{th} day, and Follow-up day

5. Semi-structured interview Schedule for Caregiver, PG, and Social Worker

To make the data more valid and reliable, the caregivers were considered as a group. The Interdisciplinary team members were categorized into another group for qualitative data. Social Workers are treated as another group.

Thus, perceptions from the three groups are cross-referenced or triangulated to arrive at a complete texture of human behavior.

Music Listening Intervention

The music listening intervention was given for 30 minutes every day for 14 days. All the patients in the music listening intervention group completed a music profile schedule at the baseline.

Music used for the intervention was pre-recorded, relaxing, non-lyrical, instrumental music having soft timbre and slow tempo with the properties of predictability and short melodic phrases. A playlist of musical pieces prepared by the researcher in consultation with the department of music therapy was made available to the patients to choose one piece of relaxing music of their choice every day. Patients listened to music through headphones in a reclined position.

The Comprehensive treatment plan was decided by the Psychiatry faculty in charge of the case. Psychosocial Interventions may include various combinations of social skills training, motivational enhancement, behavior contracting, cognitive therapy, marital and family therapy, aversion therapy, and relaxation training.

When the patient had complicated withdrawal symptoms, such as withdrawal delirium, withdrawal seizures, or other acute physical problems, the patient was considered for investigation only after recovery from these conditions. When a patient continued to the acute physical problem, the patient was considered for the study. After inclusion into the study, when the patients developed acute physical problems, the patient was excluded from the study. After the study period was over, the patients in the control group could avail of music-listening services if they wished to. After the study period, when the patients in the music listening period also would like to continue with the music listening intervention, they might do so. All assessments were made by the researcher.

Inclusion Criteria:

Patients diagnosed with alcohol dependence syndrome as per ICD-10 and the patient must be an inpatient in the department of psychiatry for a minimum period of 14 days. The patient or the caretaker must produce an informed consent to include the patient in the study. The age group of the patient must be between 18 and 64 years.

Exclusion Criteria:

Patients who had persistent acute physical problems or other co-morbid severe psychiatric diagnoses (severe depression, severe anxiety, severe OCD, etc.) were excluded.

Patients required electroconvulsive therapy and patients with cognitive impairment intellectual disability and hearing impairment were not included in the intervention process. Patients who received music intervention and relapsed could not be readmitted.

The standard or usual treatment includes appropriate pharmacological and non-pharmacological/psycho-social interventions, as per the unique needs of the individual patient.

The Comprehensive treatment plan was decided by the Psychiatry faculty in charge of the case. Psychosocial Interventions may include various combinations of social skills training, motivational enhancement, behavior contracting, cognitive therapy, marital and family therapy, aversion therapy, and relaxation training.

6. STATISTICAL ANALYSIS

The required sample size was calculated using the formula

$$n = \frac{2\sigma^2 (Z_{1-\beta} + Z_{1-\alpha/2})^2}{(\mu_1 - \mu_2)^2}$$

μ1- 9.362+-10.068 (control group)

μ2 = 4.681+10.068 (experimental group)

z1-beta = 0.84

z2=1-a/2=1.96

Sample size was calculated using this formula and was indicated to be 73 + 73 = 146 However considering that the number of patients with alcohol dependence syndrome admitted in the Psychiatry Department being around 117 in the year 2017, the patient's average stay was 12 to 15 days. And 35 patients stayed 15 days per year and hence the sample size of 30+30 =60 was considered.

Quantitative Data Analysis

The quantitative data was captured using an MS Excel (2010) spreadsheet to record the data and analyzed using standard software Statistical Package for the Social Sciences (SPSS) (v16.0) software. The data was presented as numbers and percentages for qualitative variables and mean & SD/median & Inter Quartile range (IQR) for quantitative variables. The normality of the distribution of the variables was determined using the Kolmogorov-Smirnov test and Shapiro-Wilk's test (values of $p > 0.05$ were considered the normal distribution). Appropriate tests of significance were used to find out the association depending on the nature and distribution of variables like the Chi-Square test or Fisher's exact test for categorical variables, independent t-test, and Repeated Measures (RMANOVA) for numerical variables that follow the normal distribution. For numerical variables that follow non-normal distribution, Mann-Whitney and Kruskal Wallis tests were used. Values of $p<0.05$ were statistically significant.

Qualitative data analysis

The data collected in In-Depth Interviews (IDI) and Key Informant Interviews (KII) were analyzed according to the stages suggested by the Creswell model of qualitative data analysis as follows: Creswell model of qualitative data analysis. In this study, data will be analyzed according to these stages, where after every interview content was transcribed, typed, and read several times to extract initial codes. The codes were combined according to similarities to form categories, and finally, hidden concepts and content of data were extracted. Transcripts were written from the field notes and recordings collected in the Integrated Data Infrastructure (IDI) and Key Informant Interviews (KII). Transcripts were back-translated and verified by the language experts, participants, and interviewees. After the transcription, the data was grouped into specific themes based on these categories for analysis. Coding was done using Atlas.ti (v22.0.6.0; Scientific Software Development, GmbH, Berlin) software. Manual content analysis was done for the Integrated Data Infrastructure (IDI) based on the codes and categories.

7. RESULTS

Quantitative Data Analysis:

Distribution of the number of family members among the patients using the Chi-square test:

Socio-demographic variables of patients did not significantly differ except for the number of family members of the patient between the experimental group and control group. (p = 0.031) In the experimental group, 60% of the patients had 3 family members, which is significantly higher, when compared to the control group, when compared to the control group (33.3%).

Whereas for the patient's caregivers, gender was statistically significant, other parameters of the patient's caregiver did not significantly differ between the groups. The proportion of females (100%) is higher among the experimental group than the control group's proportion of females (80%).

Distribution of socio-demographic variables and clinical variables among the patients using the Chi-square test:

The clinical variables of the patients were also not significantly differing between the groups which means both the groups are similar. In socio-demography (Age of the patient (p=0.194), Age of the Caregiver (p=0.656), Relationship with the patient (p=0.134), Educational status of the patient (p=0.841), Educational status of the Caregiver (p=0.155), Marital status of the patient (p=0.467), Marital status of the Caregiver (p=0.301), Income (p=0.512), Socioeconomic status (p=0.799), Area of domicile(p=0.605) and clinical variables (Duration of Hospitalization in days(p=0.499), duration of alcohol dependence syndrome in months (p=0.784) Severity of alcohol dependence syndrome (p=0.057), Other substances (p=0.117), ICD Diagnosis (p=0.251), Psychiatric disorder co-morbidity duration (p=0.309), Medical morbidity (p=1), Complicated (p=0.161), Medical morbidity duration (p=0.085), Other medical morbidity (p=1)) aspects were similar across both the groups (Tables 5.01 to 5.22)

Table 1: Distribution of genre of music playlists selected for listening by patients

Music Genre	No of patients	Percentage
Indian Music	9	30%
Western Music	3	10%
Both	18	60%
Total	30	100%

Patients were grouped based on the genre of music playlists selected for listening. Out of 30 patients in the experimental group, 9 (30%) listened to Indian music only, 3 (10%) listened to Western music only and 18 (60%) listened to both Indian music and Western music.

Table 2: Comparison of Domains of ACQ between experimental and control group at baseline using Independent t-test

Variable	Group	Mean ± SD	Median (IQR)	Independent t-test	p-value
ACQ Compulsivity	Experimental	9.27 ± 3.59	9.5 (7.25, 11)	0.527	0.600
	Control	9.77 ± 3.76	9 (8, 12)		
ACQ Expectancy	Experimental	10.07 ± 3.98	11 (8, 13)	0.620	0.538
	Control	10.67 ± 3.5	10.5 (9, 13)		
ACQ Purposefulness	Experimental	8.7 ± 3.89	9 (7, 11)	0.485	0.629
	Control	9.2 ± 4.09	9 (7.25, 11.75)		
ACQ Emotionality	Experimental	9.07 ± 4.35	9 (7, 12)	0.384	0.703
	Control	9.47 ± 3.7	9.5 (7.25, 12)		
Total ACQ	Experimental	37.1 ± 14.8	38 (29, 45.75)	0.539	0.592
	Control	39.1 ± 13.95	39.5 (32, 47.75)		

Table 3: Comparison of CIWA between experimental and control groups at baseline using Independent t-test

Variable	Group	Mean ± SD	Median (IQR)	Test	p-value
CIWA	Experimental	17.8 ± 12.69	15 (10, 19.5)	t = 0.035	0.972
	Control	17.7 ± 9.3	16 (12.25, 21)		

At baseline, all 4 domains (Compulsivity (p=0.600), Expectancy (p=0.538), Purposefulness (p=0.629), Emotionality (p=0.703)) scores of ACQ and total ACQ score (p=0.592) were not significantly different between the groups. Similarly, the CIWA score (p=0.972) was also not significantly different, which shows that both groups were comparable.

Table 4: Comparison of Domains of ACQ between experimental and control group at 7th day using mann-whitney test

Variable	Group	Mean ± SD	Median (IQR)	Mann-Whitney Test	p-value
ACQ Compulsivity 7th day	Experimental	4.47 ± 3.27	4 (3, 6)	320	0.054
	Control	6.1 ± 3.62	6 (3.25, 9)		
ACQ Expectancy 7th day	Experimental	5.37 ± 3.7	6 (2, 7)	351	0.143
	Control	6.53 ± 3.43	6.5 (4.25, 8.75)		
ACQ Purposefulness 7th day	Experimental	4.3 ± 3.33	4 (2, 6)	366	0.214
	Control	5.13 ± 2.98	5.5 (3, 7)		
ACQ Emotionality 7th day	Experimental	4.83 ± 3.82	5.5 (1.5, 6.75)	399	0.451
	Control	5.3 ± 2.96	6 (3, 7)		
Total ACQ 7th day	Experimental	18.97 ± 13.44	18 (8.5, 26)	345	0.122
	Control	23.07 ± 12.34	24.5 (14, 32.75)		

Table 5: Comparison of CIWA between experimental and control group at 7th day using mann-whitney test

Variable	Group	Mean ± SD	Median (IQR)	Mann-Whitney Test	p-value
CIWA 7th day	Experimental	7.07 ± 9.16	4.5 (2.25, 8.75)	342.5	0.113
	Control	8.87 ± 7.05	7 (4, 11.5)		

On the 7th day, the Compulsivity domain of ACQ (p=0.054) was significantly different between the groups. Expectancy (p=0.143), Purposefulness (p=0.214), Emotionality (p=0.451)) scores of ACQ, and total ACQ score (p=0.122) were not significantly different between the groups. Similarly, the CIWA score (p=0.113) was also not significantly different.

Table 6: Comparison of Domains of ACQ between experimental and control group at 14th day using mann-whitney test

Variable	Group	Mean ± SD	Median (IQR)	Mann-Whitney Test	p-value
ACQ Compulsivity 14th day	Experimental	1.17 ± 1.86	0 (0, 1)	294	0.016
	Control	2.77 ± 2.7	3 (0, 4)		
ACQ Expectancy 14th day	Experimental	1.53 ± 2.16	1 (0, 2)	266.5	0.006
	Control	3.57 ± 3.16	3 (1, 5.75)		
ACQ Purposefulness 14th day	Experimental	1.17 ± 1.8	0 (0, 2)	293	0.015
	Control	2.4 ± 2.24	2.5 (0, 3)		
ACQ Emotionality 14th day	Experimental	1.23 ± 1.76	0 (0, 2)	326	0.054
	Control	2.3 ± 2.26	2.5 (0, 3)		
Total ACQ 14th day	Experimental	5.1 ± 6.97	3.5 (0, 7)	260	0.005
	Control	11.03 ± 9.34	11 (3.25, 15.75)		

Table 7: Comparison of CIWA between experimental and control group at 14th day using Independent t-test

Variable	Group	Mean ± SD	Median (IQR)	Test	p-value
CIWA 14th day	Experimental	1.2 ± 3.76	0 (0, 0)	t = 0.991	0.326
	Control	2.1 ± 3.25	0 (0, 3.75)		

On the 14th day, all 4 domains of ACQ score (compulsivity (p=0.016), expectancy (p=0.006), purposefulness (p=0.015), emotionality (p=0.054) scores of ACQ and total ACQ

score (p=0.005)) were significantly different between the groups, which means that level of craving was significantly lower in the experimental group than the control group. The CIWA score (0.326) was not significantly different between the groups.

Table 8: Comparison of Domains of ACQ between experimental and control groups on 21st day using Independent t-test

Variable	Group	Mean ± SD	Median (IQR)	Test	p-value
ACQ Compulsivity 21st day	Experimental	0.6 ± 1.57	0 (0, 0)	t = 2.301	0.025
	Control	1.73 ± 2.2	0 (0, 3)		
ACQ Expectancy 21st day	Experimental	0.97 ± 2.13	0 (0, 0)	t = 2.214	0.031
	Control	2.33 ± 2.63	2 (0, 5)		
ACQ Purposefulness 21st day	Experimental	0.73 ± 1.62	0 (0, 0.75)	t = 0.774	0.442
	Control	1.03 ± 1.38	0 (0, 2)		
ACQ Emotionality 21st day	Experimental	0.57 ± 1.55	0 (0, 0)	t = 2.156	0.035
	Control	1.53 ± 1.91	0 (0, 3)		
Total ACQ 21st day	Experimental	2.87 ± 6.39	0 (0, 2)	t = 2.148	0.036
	Control	6.63 ± 7.17	6 (0, 12)		

Table 9: Comparison of CIWA between experimental and control groups on 21st day using Independent t-test

Variable	Group	Mean ± SD	Median (IQR)	Test	p-value
CIWA 21st day	Experimental	0.47 ± 1.25	0 (0, 0)	t = 1.813	0.075
	Control	1.3 ± 2.18	0 (0, 2)		

On the 21st day, (Compulsivity (p=0.025), Expectancy (p=0.031), Emotionality (p=0.035)) domains scores of ACQ and total ACQ score (p=0.036) were significantly different between the groups. The purposefulness domain of ACQ (p=0.442) and the CIWA score (p=0.075) were not significantly different.

Table 10: Comparison of experimental group and control group in terms of total ACQ score using repeated measures Friedman Test

Group	Day	Mean ± SD	Median (IQR)	Friedman Test	p-value
Experimental	Baseline	37.1 ± 14.8	38 (29, 45.75)	80.179	< 0.001
	7th Day	18.97 ± 13.44	18 (8.5, 26)		
	14th Day	5.1 ± 6.97	3.5 (0, 7)		
	21st Day	2.87 ± 6.39	0 (0, 2)		
Control	Baseline	39.1 ± 13.95	39.5 (32, 47.75)	77.907	< 0.001
	7th Day	23.07 ± 12.34	24.5 (14, 32.75)		
	14th Day	11.03 ± 9.34	11 (3.25, 15.75)		
	21st Day	6.63 ± 7.17	6 (0, 12)		

Table 11: Comparison of experimental group and control group in terms of CIWA score using repeated measures Friedman Test

Group	Day	Mean ± SD	Median (IQR)	Friedman Test	p-value
Experimental	Baseline	17.8 ± 12.69	15 (10, 19.5)	83.112	< 0.001
	7th Day	7.07 ± 9.16	4.5 (2.25, 8.75)		
	14th Day	1.2 ± 3.76	0 (0, 0)		
	21st day	0.47 ± 1.25	0 (0, 0)		
Control	Baseline	17.7 ± 9.3	16 (12.25, 21)	83.065	< 0.001
	7th Day	8.87 ± 7.05	7 (4, 11.5)		
	14th Day	2.1 ± 3.25	0 (0, 3.75)		
	21st day	1.3 ± 2.18	0 (0, 2)		

When comparing all 4 domains (Compulsivity (p=<0.001), Expectancy (p=<0.001) Purposefulness (p=<0.001) Emotionality (p=<0.001) scores of ACQ and total ACQ score (p=<0.001) were significantly different between the groups. Similarly, the CIWA score (p=<0.001) was also significantly different.

Friedman test shows a significant reducing trend in all domains of ACQ, total score of ACQ and CIWA score for both groups. Further analysis was done using the independent t-test to detect the significance between the reduction score of experimental and control groups. This test reveals that there is no significant difference between the reduction score of experimental and control groups from the baseline to follow-up values.

Association between ACQ score among patients with alcohol dependence using correlation matrix

There is a significant positive correlation between ACQ score and duration of hospitalization (r=0.276) (p=0.033). There is a positive correlation for psychiatric comorbidity duration with compulsivity score (r=0.386) (p=0.002), expectancy score (r=0.310) (p=0.016), purposefulness (r=0.409) (p=0.001), emotionality (r=0.418) (p=<001) and total ACQ score (r=0.410) (p=0.001). There is a positive correlation for medical morbidity duration with compulsivity score (r=0.294) (p=0.023), expectancy score (r=0.321) (p=0.013), purposefulness (r=0.281) (p=0.030), emotionality (r=0.281) (p=0.030) and total ACQ score (r=0.314) (p=0.015).

All domains of ACQ and total ACQ score were not significantly associated with the socio-demography (Age of the patient, Marital status, Educational status of the patient, Socioeconomic status, Area of domicile, and clinical variables Severity of Alcohol dependence syndrome, Other substances use, Psychiatric Co-Morbidity, Medical Morbidity, Other Medical Morbidity.

CIWA score was not significantly associated with the socio-demography (Age of the patient, Marital status, Educational status of the patient, Socioeconomic status, Area of domicile, and clinical variables Severity of Alcohol dependence syndrome, Other substances use, Psychiatric Co-Morbidity, Medical Morbidity, Other Medical Morbidity.

The multiple regression analysis showed psychiatric comorbidity duration significantly influenced the compulsivity domain score of ACQ. (p=0.007) Psychiatric comorbid conditions have significantly influenced the expectancy score of ACQ. (p=0.007) Psychiatric comorbidity duration (p=0.013) and Severity of Alcohol dependence syndrome (p=0.029) significantly influence the purposefulness score of ACQ and the emotionality score of ACQ. The severity of Alcohol dependence syndrome (p=0.031) and other substance use (p=0.05) significantly influenced the total ACQ score.

Craving

The patients with Alcohol dependence syndrome in the experimental group were divided into sub-groups based on their age, marital status, domicile, educational status, and socioeconomic status.

The results showed that the patients do not differ in their level of craving based on their age, marital status, domicile, or educational status.

Socio-economic status makes a difference in the level of craving among patients with Alcohol dependence syndrome socio-economic. The level of craving also differs based on their Medical morbidity and Psychiatric co-morbidity. And the patients with Alcohol dependence syndrome did not differ in other Psychiatric comorbidities.

Withdrawal Symptoms

The results showed that patients with Alcohol dependence syndrome did not differ in the level of their withdrawal symptoms based on their age, marital and educational status, and domicile or socioeconomic status.

Besides, patients with Alcohol dependence syndrome did not differ in the level of their withdrawal symptoms based on their Psychiatric and other comorbidities.

Patients with Alcohol dependence syndrome differ in the level of withdrawal symptoms based on their Medical morbidity.

Correlation

The correlation results showed that there was a significant positive relationship between craving and withdrawal symptoms.

RM-ANOVA results showed that the music listening intervention was significantly effective in the management of the level of craving of patients with Alcohol dependence syndrome. On the other hand, music listening intervention was not significantly effective in the management of their withdrawal symptoms.

Qualitative Analysis

The interview questionnaire was administered to the caretakers, physicians, and social workers of the patients, and the answers were recorded and triangulated identifying the themes and making an analysis of the interview.

The questions in the questionnaire were based on three themes on the research carried out and from the themes, the following observations have been made as research findings.

The three main themes are i) acceptance ii) withdrawal and iii) craving.

i) Acceptance

Among the 30 patients of the music intervention as part of the research, it was found that two of the patients were not interested in the beginning of the music intervention. But after two or three days they also joined the intervention with cooperation; it is noteworthy that two of them who were not interested in the beginning became ardent listeners of music even after the intervention was over. It also helped them to continue and maintain their abstinence from alcohol. All the others responded to the music-listening sessions. All the patients were regular listeners and also cooperated and provided their interaction and maximum involvement in the music listening interventions.

According to the respondents, It was found that the music-listening interventions were good and helpful. The patients were fully interested and involved and all of them felt satisfied at the end of the interventions. They were able to gain peace of mind and a sense of relaxation. They have declared that it was a new experience for them. They have added that they have lost interest in alcohol and realized how it has spoiled their character, behavior, and mood. They were determined to inform other patients that music-listening interventions helped them to gain relief from alcohol dependence.

Music listening interventions had helped them to be cooperative and interactive and said that they gained the process of communication with others in the family and friends and deeply regretted their past lives. At the end of the interventions, they stated that they did not have any disturbance in sleep and they were free from anger and irritability. Most importantly their general health had improved considerably.

Example Quotes of the patient's Caregiver (Wife)

"he said, he is listening to music 20 minutes daily. He said he felt relaxed."

ii) Withdrawal

Overall analysis revealed that withdrawal symptoms have decreased. In the case of seven patients the tremors they had before the music interventions have decreased. Insomnia had reduced. Sixteen (53%) of the patients had sleep disturbances and appetite disturbances before the music interventions. The music therapy provided them with undisturbed sleep and regular appetite. All three interviewees stated that sixteen (53%) patients had detectable changes in their behavior and mood.

According to the respondents, The levels of anxiety, stress, fear, and anger among the patient**s** have decreased and they were able to maintain calmness, and decent behavior without irritability and anger. They have become more cooperative, communicative, and interactive. The relationships with family members and others have become healthy, friendly, and more respectable. Three of them declared that the music interventions have made them cheerful in their lives.

Example Quotes of the patient's Caregiver (Wife)

"He got good sleep after he listened to music. In the past, he had sleep disturbances. But after he listened to music, he got better sleep. He was very angry in the past. But now, it has decreased more than 80%."

iii) Craving

According to the respondents, regarding craving, 60% of the patients stated that they did not have the thought of drinking alcohol after the music interventions. They said that they had gained confidence and maintained abstinence considering the status of the family and their health and the waste of resources on alcohol. The patients felt that they were relaxed and there had been a change in their mood, behavior, and interactions.

The craving for alcohol ceased in the case of 25 respondents (83.3%) and they stated that negative thinking and thoughts of drinking were decreased. Immediately after the music sessions, five (16.6%) of them declared that they would maintain abstinence from alcohol. One among the whole sample had a craving for smoke and he declared that raving for smoke had ceased from his thought.

Example Quotes of the patient's Caregiver (Wife)

"Now He is not talking about it. But in the past, he used to say that, he was so tense, that he thought of drinking. But now he is asking for food to eat. He is not at all talking about the alcohol thinking."

8. DISCUSSION

Triangulating the results of quantitative and qualitative results it was found that there is a correlation between craving and withdrawal symptoms among the patients of alcohol dependence syndrome undergoing music listening therapy.

Socioeconomic status plays a significant role in the level of craving whereas it does not influence the level of withdrawal symptoms among the patients of alcohol dependence.

The patients with alcohol dependence syndrome differ based on their Medical morbidity both in the level of craving and withdrawal symptoms.

Results showed that listening to music affects their personality, self-respect, and moral stature. In the quantitative analysis music listening intervention was not significantly effective in the level of withdrawal symptoms among the respondents whereas it was significantly effective in the craving level of the patients.

9. LIMITATION OF THE STUDY

Since the primary investigator was involved in providing the intervention and assessing the outcome measures, blinding was not possible in the present study. Thus, investigator bias could not be eliminated.

Regarding treatment, as usual, it was administered to all the patients as per standard treatment guidelines being followed in the department. However, within the framework of the guidelines, some variations between the treatments to the patients were inevitable and were not recorded as part of the study.

The Follow-up assessments of all the patients were done on day 21. However, due to the COVID-19 pandemic and other logistic factors, follow-up for a longer period was not feasible, this can be considered as a limitation of this study since long-term follow-up yielded more robust information about the effectiveness of any intervention.

10. CONCLUSION

Music listening interventions applied to treat patients with alcohol dependence as an additive therapy were able to be an effective adjunct treatment. The patients with alcohol dependence syndrome experienced lower levels of craving and withdrawal symptoms after undergoing music listening intervention along with treatment as usual. The music sessions helped to maintain abstinence even after the treatment was over. There was an improvement in sleep and appetite. It is appropriate and beneficial to consider providing music-listening intervention, to patients with alcohol dependence.

11. SUMMARY

The present study attempted to explore the effect of music listening intervention among patients of alcohol dependence syndrome undergoing treatment for detoxification. The patients were selected from the patients who fulfilled ICD-10 and who satisfied the conditions of inclusion and exclusion criteria for the research applying music listening intervention. The patients were randomly selected for the study and they were divided into two groups, the control and experimental groups.

The music listening intervention comprised music sessions of 30 minutes a day for 14 days. The music had been pre-recorded with the consultation of a music therapist and the songs were selected and the respondents listened to the music individually using headphones in a reclining position.

Demographic details and data from craving and withdrawal scales were collected and interviews were conducted with caregivers, PGs, and social workers and the interviews were recorded and transcribed. The Data was collected from the patients provided every week at the end of music listening interventions. The data was triangulated, themes ascertained and the results were obtained.

Qualitative results showed that music listening intervention had reduced craving and withdrawal symptoms among the patients of alcohol dependence syndrome. It was observed through, quantitative results that music listening intervention was significantly effective in reducing the level of craving among patients with alcohol dependence. However, It was observed through, quantitative results that music listening intervention was not significantly effective in reducing the level of withdrawal symptoms among patients with alcohol dependence

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